

Amendments the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 to 7 are cancelled and claims 8, 10, 12 and 14 are amended as follows:

Claims 1 to 7 (Cancelled).

8. (Currently Amended) A method for operating a mixed-potential exhaust-gas probe for an internal combustion engine wherein exhaust gas is generated, the exhaust-gas probe including: a heatable probe ceramic; a first electrode arranged in a chamber subjected to a reference atmosphere; and, a second electrode, which detects gas molecules, and is arranged in the exhaust gas of the internal combustion engine; the method comprising the steps of:

providing a pump voltage source and applying a constant external pump voltage across the first and second electrodes so that, in the interior of the chamber, a somewhat reduced oxygen partial pressure relative to the oxygen partial pressure in the exhaust gas is adjusted by the electrochemical pumping off of the oxygen molecules;

15 applying a constant external voltage to the electrodes with this voltage molecules and the voltage across said first and second electrodes deviating from the thermodynamic equilibrium

voltage of the wanted reaction which takes place in said exhaust-gas probe; and,

20 measuring and evaluating the current dropping flowing across the electrodes.

9. (Previously Presented) The method of claim 8, comprising the further step of experimentally determining the optimal voltage for detecting individual mixed potentials of individual components of the exhaust gas.

10. (Currently Amended) A method for operating a mixed-potential exhaust-gas probe for an internal combustion engine wherein exhaust gas is generated, the exhaust-gas probe including: a heatable probe ceramic detecting gas molecules; a 5 first electrode mounted in a chamber and the first electrode being subjected to a reference atmosphere; and, a second electrode arranged in the exhaust gas of the internal combustion engine; the method comprising the steps of:

providing a pump voltage source and applying a pump voltage across the first and second electrodes so that a somewhat reduced oxygen partial pressure is adjusted relative to the oxygen partial pressure in the exhaust gas in the interior of the chamber by electrochemically pumping off the oxygen molecules; and,

15 applying a constant current to the probe ceramic and measuring and evaluating the voltage adjusting which results between the first and second electrodes with this voltage deviating from the thermodynamic equilibrium voltage of the

desired reaction which takes place in said exhaust-gas probe.

11. (Previously Presented) The method of claim 10, comprising the further step of experimentally determining the current for detecting individual mixed potentials of individual components of the exhaust gas.

12. (Currently Amended) A circuit arrangement for carrying out a method for operating a mixed-potential exhaust-gas probe for an internal combustion engine wherein exhaust gas is generated, the exhaust-gas probe including: a heatable probe ceramic; a first 5 electrode arranged in a chamber subjected to a reference atmosphere; and, a second electrode, which detects gas molecules, and is arranged in the exhaust gas of the internal combustion engine; the method comprising the steps of: providing a pump voltage source and applying a pump voltage across the first and 10 second electrodes so that, in the interior of the chamber, a somewhat reduced oxygen partial pressure relative to the oxygen partial pressure in the exhaust gas is adjusted by the electrochemical pumping off of the oxygen molecules; applying a constant external voltage to the electrodes with this voltage 15 molecules and the voltage across said first and second electrodes deviating from the thermodynamic equilibrium voltage of the wanted reaction which takes place in said exhaust-gas probe; and, measuring and evaluating the current dropping flowing across the electrodes; the arrangement comprising:

20 an inverting operational amplifier having a non-inverting input, an inverting input and a feedback loop;

a voltage divider R2 connected to said non-inverting input;
the exhaust-gas probe being connected to said inverting
input;

25 a reference resistor R1 arranged in said feedback loop; and,
a differential amplifier which amplifies the voltage
difference between said non-inverting input and the output of the
operational amplifier and outputs the difference as a measurement
signal.

13. (Previously Presented) The circuit arrangement of claim 12,
further comprising a switching device for switching the circuit
arrangement for the voltage polarized current measurement over to
the circuit arrangement for current polarized voltage
5 measurement.

14. (Currently Amended) A circuit arrangement for carrying out
a method for operating a mixed-potential exhaust-gas probe for an
internal combustion engine wherein exhaust gas is generated, the
exhaust-gas probe including: a heatable probe ceramic detecting
5 gas molecules; a first electrode mounted in a chamber and the
first electrode being subjected to a reference atmosphere; and, a
second electrode arranged in the exhaust gas of the internal
combustion engine; the method including the steps of: providing a
pump voltage source and applying a pump voltage across the first
10 and second electrodes so that a somewhat reduced oxygen partial
pressure is adjusted relative to the oxygen partial pressure in
the exhaust gas in the interior of the chamber by
electrochemically pumping off the oxygen molecules; and, applying

15 a constant current to the probe ceramic and measuring and
evaluating the voltage adjusting which results between the first
and second electrodes with this voltage deviating from the
thermodynamic equilibrium voltage of the desired reaction which
takes place in said exhaust-gas probe; the arrangement
comprising:

20 a non-inverting operational amplifier having a non-inverting
input, an inverting input and a feedback loop;
a voltage divider R2 connected to the non-inverting input;
a reference resistor R1 connected to the inverting input;
said exhaust-gas probe being arranged in said feedback loop; and,
25 a differential amplifier for amplifying the voltage
difference at the sensor and outputting said voltage difference
as a measurement signal.

15. (Previously Presented) The circuit arrangement of claim 14,
further comprising a switching device for switching the circuit
arrangement for the voltage polarized current measurement over to
the circuit arrangement for current polarized voltage
5 measurement.